

SPORTS SUPPLEMENTS

Dietary supplements, nutritional ergogenic aids, sports supplements, sports foods and therapeutic nutritional supplements are all terms used to describe a variety of products that collectively form the sports supplement industry. Amazingly, dietary supplements are a multi-billion dollar industry in the US alone!

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SUPPLEMENT use is a widespread and accepted practice by many athletes and appears to be ingrained into the culture of endurance sports such as running, swimming and, dare I say it, triathlon. In a study published in 2001, researchers investigating supplement use patterns of the Australian Swimming Squad, reported athletes using 207 different brands of supplements - there were only 77 swimmers in the study. 94 percent of swimmers reported using non-food supplements such as pill and powder supplements, pretty alarming hey!

In this study, athletes were also asked to list important sources of information that influenced whether they would consume a supplement or not. Just over 50% of athletes relied heavily on professional advice such as dietitians, doctors, pharmacists and sports scientists. What were the other 50% relying on you may ask - well, a multitude of sources including coaches, other athletes, and list of ingredients.

The odds are in their favour!

The supplement industry is based on the premise of a "Type II error" which is a "false positive" outcome. Basically, supplement companies rely on the fact that as an athlete you can't afford not to take something that may enhance your exercise performance or maintain your health while undertaking regular intense exercise. It's a hard argument to contest without sounding conservative - believe me.

So for many athletes it's simply a question of "Well if it won't hurt me, why not?" Many

athletes assume that given the supplements are available for purchase, they are safe for consumption. In fact, in many countries there are no official or mandatory accounting processes to document adverse side effects arising from the use of dietary supplements. Information from medical registers shows that while the overall risk to public health from the use of supplements and herbal and traditional remedies is low, there are cases of toxicity and side effects, including allergic reactions to some products (eg. royal jelly), overexposure as a result of self medication and poisoning due to contaminants.

Which dietary supplements can help your exercise performance or assist in maintaining your health while undertaking strenuous exercise?

Some supplements and sports foods offer real advantages. Some products work by producing a direct performance-enhancing (ergogenic) effect on exercise performance. Other products can be used by athletes to meet nutritional goals and, as an indirect outcome, allow athletes to reach optimal performance. In some cases these effects are so well known and easily demonstrated that beneficial uses of sports foods or supplements are clear-cut. For example, there are many studies that support the benefits of consuming sports drinks to supply carbohydrate and fluid during high-intensity exercise (see Coombes and Hamilton, 2000).

What's frustrating for me with regards to supplement use, is athletes that fail to use sup-

plements and sports foods that have been clearly shown to enhance exercise performance and recovery from intense exercise, yet are willing to use products with far less credibility. In many instances, these athletes will rely on testimonials from other athletes or advertisements promoting the use of a particular supplement.

AIS Sports Supplement Program

To assist athletes and coaches the Australian Institute of Sport has developed a Sports Supplement Program that categorises supplements according to their scientific merit or support. Their approach provides objective information to you and your coaches regarding the efficacy of use, so you can make informed decisions about your supplement use from credible, reliable sources of information.

Under the context of the sports supplement program, a panel of experts in sports nutrition, medicine and science, rank supplements and sports foods based on current scientific thinking. The ranking system has four tiers which is regularly reviewed to ensure supplements are placed in the category that best fits the available evidence. Rather than looking at supplements as those that work and those that don't, the system ranks supplements into categories from what is most likely to provide a benefit for little risk, to what provides least benefit and a definite risk. The risk largely represents that of a positive doping outcome, and any potential health implications.

Table 1 outlines the four categories of the AIS

Sports Supplement Program. It's probably worth highlighting that supplements that are placed into Category A are included for use according to a specific protocol, in a specific sports situation. For instance, iron supplements are listed in category A, but are



listed for use only when iron depletion has been clinically diagnosed by a medical doctor. It is not listed for daily use in athletes that have normal iron stores and haemoglobin levels. For full details of the program

visit the Australian Institute of Sport Department of Sports Nutrition website at www.ais.org.au/nutrition

Regulation of supplements and sports foods - a note for professional athletes to consider

There is no universal regulation of sports foods and supplements. Countries differ in their approach to the regulation of them, with many relying largely on the industry self-regulating. It is important for professional athletes to be aware of the fundamental differences which exist between systems adopted by various countries, particularly when purchasing supplements in foreign countries or via mail order and internet sales.

Australia's regulation is more comprehensive than most, but there are no guarantees. For professional athletes out there - WADA don't care, they take the simplistic view which is one of "strict liability", regardless if you took the product knowingly or not.

What's coming up?

In the next issue I will cover the latest research on the wonderful world of dietary antioxidant supplements. I will answer the question as to whether they weigh-up against a high antioxidant diet containing plenty of fruit and vegetables.

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REFERENCES:

1. Baylis A, et al. (2001) IJSNEM. 11:365-83.
2. Coombes, JS & KL Hamilton. (2000). Sports Med. 29(3):181-209.

Table 1: Australian Institute of Sport, Sports Supplement Program.

Supplement Category	Category Description	Products included in category
Category A: Approved Supplements	Provide a useful and timely source of energy and nutrients in an athlete's diet. Have been shown in scientific trials to provide a performance benefit, when used according to a specific protocol in a sports specific situation.	Sports Drinks; Liquid meal supplements; Sports Gels; Sports Bars; Caffeine; Creatine Monohydrate; Bicarbonate; Anti-oxidants: vitamin C, vitamin E; Sick pack (zinc and vitamin C); Multivitamin/mineral; Iron supplement; Calcium supplement; Glycerol (for hyperhydration); Electrolyte replacement
Category B: Supplements under consideration	Supplements that have no substantial proof on health or performance, however: <ul style="list-style-type: none"> · Remain of interest to AIS coaches and athletes · Are too new to have received adequate scientific attention · Have preliminary data that suggest possible benefits 	Echinacea; Glutamine; Hydroxymethylbutyrate (HMB); Colostrum; Probiotics; Ribose
Category C: Supplements that have no clear proof of beneficial effects	This category remains the majority of supplements and sports products promoted to athletes. Supplements not specifically listed within this system probably belong in this category. Despite the popularity and widespread use of many of these supplements, they lack scientific support in enhancing exercise performance or health. In some cases these supplements have been shown to impair sports performance or health, with a clear mechanism to explain these results.	Amino acids (these can be provided in everyday foods or sports foods listed in Group A); Ginseng; Garlic; Cordyceps; Nitric oxide stimulators; Inosine; Coenzyme Q10; Cytochrome C; Carnitine; Bee pollen; Gamma-oryzanol and ferulic acid; Chromium picolinate; Pyruvate; Vitamin B12 injections; Injectable forms of other vitamins; Oxygenated water; All supplements from network marketing companies; Most of the other supplements not listed in this system
Category D: Banned Supplements	These supplements are either directly banned by the World Anti Doping Agency (WADA) code or provide a high risk of producing a positive doping outcome. Supplements should not be taken by AIS athletes.	Androstenedione; DHEA; 19-norandrostenediol; Tribulus terrestris and other herbal testosterone supplements; Ephedra; Strychnine